

REMARKS

This is intended as a full and complete response to the Final Office Action dated April 26, 2011, having a shortened statutory period for response set to expire July 26, 2011. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1-20 and 22-43 remain pending in the application and are shown above. Claims 21 and 44 have been cancelled by Applicant without prejudice. Claims 1-20 and 22-44 stand rejected by the Examiner. Reconsideration of the rejected claims is requested for reasons presented below.

Independent Claim 1 is amended to clarify the claimed subject matter, from language previously presented as Claim 44. Applicant respectfully submits that no new matter has been introduced in this amendment.

Claim Rejections – 35 U.S.C. § 103

Claims 1-20 and 22-44 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Hosoki et al.* (US 3,714,422) in view of *Abe et al.* (US 6,534,766). Applicant respectfully traverses this rejection.

Hosoki describes a charged particle beam apparatus provided with an adjusting device to change an impinging angle of charged particle beams to be irradiated onto a specimen, thereby enabling a stereo-image thereof without tilting the specimen. In Fig. 6 of *Hosoki*, numeral 12 designates an electrode for dividing the electron beam into two beam portions, and numerals 13 and 14 designate deflecting devices. A negative voltage is applied to the dividing electrode 12 by means of a very thin metal wire, etc. The electron beam focused on an image plane of the focusing lens 3 is divided by the dividing electrode 12 into two beam portions. The two electron beam portions pass respectively through the deflective devices 13 and 14 and then enter into two passage holes of the aperture plate. Accordingly, by deflecting one of the divided electron beams, one of the beams does not reach its corresponding passage-hole on the aperture plate. It is thereby possible to vary the impinging angle of the electron beam radiated onto the specimen, as shown by solid line or dotted line.

According to the Examiner, the embodiment of *Hosoki* depicted in Fig. 5 discloses two electrodes (10, 11), wherein one of the electrodes (10) has two openings (allegedly similar to present claim 1). In order to alternately open and close the two apertures of the aperture plate 10, a shutter 11 having a single aperture is provided at the aperture plate 10. By shifting the shutter 11 in the transverse direction, a focused electron beam of different impinging angles may be irradiated alternately on the specimen, and the same region covering SS1 can be scanned. While the apertures of the plate 10 require high precision, the aperture of the shutter 11 needs not be so high in its precision as that of the plate 10, such that a stereo-image of the specimen can be observed.

The Examiner admits that *Hosoki* does not disclose a driving means coupled to at least one out of the first electrode and the second electrode (10, 11) for aligning the first opening with the second opening. In order to solve this missing feature, the Examiner cites *Abe*. *Abe* discloses a SEM having a plurality of electrostatic and magnetic lenses. Fig. 7 shows a charged particle beam system 30 comprising an electron gun part, an electron-optical system, a stage, a secondary electron image acquiring part, and a control part. The acceleration electrode 16 accelerates the extracted emission electrodes to cause the electrons to be incident on the electron-optical system as electron beams 6 / 8. Fig. 7 further shows a correction deflection calculating part 66 and an objective lens correction control part 68. In this embodiment, the trajectories 8 of the electron beams 6 are shifted by the scanning deflecting device 26, and the center of the objective lens 28 is shifted to the position after the trajectories 8 of the electron beams 6 are shifted, so that a deterioration of an electron-optics property can be prevented.

Nevertheless, a combination of the two documents does not disclose the features of the claims, because the stereoscopic feature of *Hosoki* means that the images obtained by having the beam pass through either of the two opening are different. Furthermore, according to *Hosoki*, the multiple opening in electrode 11 (see Fig. 5 above) are not actually physically replaced by each other, but only mutually covered by the shutter 11 with one opening 10. Additionally, *Hosoki* does not disclose that the shutter 11 is a first electrode.

This is also important with respect to the obtainable effect of the replacement of the openings. While in *Hosoki*, the replacement requires modifying the beam path in order to direct the beam to the left or right opening. This is not necessary in the present claims. As clarified in amended Claim 1, the active opening "is in line with the charged particle beam." This feature is not shown or disclosed by *Hosoki* or *Abe*, whether alone or in combination. In contrast, the two openings of *Hosoki* are not in line with the electron beam. As can be seen in Fig. 5 of *Hosoki*, the beam is strongly deflected, such that the opening cannot be in line with the electron beam, because "in line" with an electron beam means that the opening is positioned in the path of the undeflected, straight electron beam. Withdrawal of the rejection is respectfully requested.

In addition, independent Claim 22 provides the features of a first electrode, a second electrode, a first driving means, and:

whereby at least one out of the first and second electrodes is shaped to comprise multiple openings for focusing the charged particle beam, whereby at least one out of the first and second electrodes is shaped and positioned to provide that the distance of at least one of the multiple openings to an opening of an adjacent electrode in axial direction is larger by at least ten percent compared to the distance in axial direction of at least one of the other of the multiple openings to said opening.

There is no disclosure in either *Hosoki* or *Abe* of the arrangement provided above. The Examiner contends that *Hosoki* shows that "[t]he distance between the opening in the first or second electrode is at least ten percent larger than the distance between the two electrodes [Fig 5]." (Office Action, page 4). Applicants respectfully submit that the Examiner's rejection does not address the features provided above. The claim language does not compare the distance between openings in one electrode to the distance between the electrodes. Rather, Claim 22 provides for different distances in the axial direction. More specifically, Claim 22 provides that "the distance of at least one of the multiple openings to an opening of an adjacent electrode in axial direction is larger by at least ten percent compared to the distance in axial direction of at least one of the other of the multiple openings," as recited more fully in the claim. As shown in Fig. 5 of *Hosoki*, the two apertures of the aperture plate 10 have the same distance in the axial direction to the opening in the shutter 11. Thus, there is simply no feature in *Hosoki* that discloses or

suggests the arrangement provided in Claim 22. *Abe* is also silent regarding the above quoted arrangement. Therefore, the features of Claim 22 are not shown or disclosed by *Hosoki* or *Abe*, whether alone or in combination. Withdrawal of the rejection is respectfully requested.

Further, independent method Claim 39 requires "providing a beam optical component according to claim 1," as recited more fully in the claim. Because the features of claim 1 are not disclosed or suggested by the cited references, the method steps using "a beam optical component according to claim 1" are also not disclosed or suggested. Withdrawal of the rejection is respectfully requested.


Because the independent claims are allowable, the dependent claims are also allowable for the reasons provided above. Therefore, claims 1-20 and 22-43 as amended are patentable over *Hosoki* and *Abe*, whether alone or in combination. Withdrawal of this rejection is respectfully requested.

Conclusion

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,

By 

Keith M. Tackett

Registration No.: 32,008

PATTERSON & SHERIDAN, LLP

3040 Post Oak Blvd, Suite 1500

Houston, Texas 77056

Telephone: (713) 623-4844

Facsimile: (713) 623-4846

Attorney For Applicant